

The 

Status and Extent of American
Domestic Water Commerce.

AN ADDRESS BY

THOMAS J. VIVIAN,
(*In Charge of Transportation Statistics, U. S. Census,*)

DELIVERED BEFORE THE

WORLD'S WATER COMMERCE CONGRESS

IN ITS SIXTH SESSION,


AT

CHICAGO, AUGUST, 1893.

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ARGUMENT.

That while our foreign carrying trade has undoubtedly diminished, the increase in our domestic carrying trade has been largely compensatory; that this domestic commerce has developed during the last few years into an industry of extraordinary extent; that our entire carrying fleet is larger than Great Britain's; and, that the area of our domestic commerce is so vast that the distances made in average trips on inland waters cover many of the distances made in England's foreign voyages.

It would be simply going behind the records to minimize the fact that what is generally called our "carrying trade" is neither what it was nor what it should be. The facts and figures of the case are too clear and too overwhelming to admit of any such voluntary shortsightedness. When we see that in 1856 the values of the imports and exports coming into and leaving our ports on foreign vessels amounted to \$159,336,576, while those carried on

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American vessels reached the heavy figures of \$482,268,274, and then that in 1866 the value of the exports and imports carried on our vessels had shrunk to \$325,711,861, while those on foreign vessels had risen to \$685,226,691; that when the next decade had been rounded the value of our exports and imports carried under the stars and stripes had still further diminished to \$311,076,171, while those brought to and taken from our ports under "the meteor flag of England" and other foreign bunting had grown to \$813,354,987; and that finally, in 1886, the value of the export and import trade of our ports on American vessels had still further dwindled to \$197,349,503, while that of the export and import trade on foreign vessels had swelled to \$1,073,911,113—when we see these things, I say, it would be mid-summer madness to deny that we have fallen out of the race, and that our flag now flutters feebly and seldom where once it was a brave and frequent sight. Figures, I know, are not the most exhilarating form of literature, yet in such arguments as mine they must claim a place. A few examples of that concrete form known as percentages I shall ask you to remember, as, for example, that in 1856, out of the total value of our exports and imports American vessels carried 75 per cent.; that in 1866, out of a similarly formed total American vessels carried only 66 per cent.; that in

1876 we only carried 33 per cent., while in 1886 we carried but 15 per cent., which, in the language of vulgar fractions, means that in 30 years we fell from the gallant height of a little over three-quarters of the whole to the insignificance of something under one-sixth.

Unfortunately this part of the story grows worse as it grows longer, and we find that in the Census year, which is the period in which I am particularly interested, the actual figures stood as follows: Value of the exports and imports of the United States carried in American vessels, \$202,451,086; value carried on foreign vessels, \$1,371,116,744, while our percentage had shrunk to 12. The complete returns would show you that in 1890 we were actually carrying freight of less than half the value of that carried in 1860 (the exact figures of the earlier year were \$507,247,557), and that in 1890 we carried over \$50,000,000 worth of freight *less* than the foreign vessels did in 1860. Lastly, it will no doubt interest you sadly to learn that the percentage of freight carried on American vessels in 1890 was the lowest it had ever touched up to that date—that is, 12.29, which means that in the topsiturviness of trade the foreign vessels carried 87.71 per cent., a greater proportion by 12 per cent. than we ever carried.

The figures I have just given you are of the sort which are employed by pessimists when preaching of

the decadence of our merchant marine, and of course are incontrovertible. But it is not all Ichabod; there is a small amount of glory left; there is quite a little commerce still done under the American flag, and the shipbuilding yards of the nation are not altogether deserted. During the 30 years ending in 1890 our records show that we built 1,747 ships and barks, 575 barges, 12,423 schooners, and 17,359 sloops and other small craft—a total of 32,104 sailing and unrigged craft, representing 5,159,605 tons of tonnage, together with 10,652 steamers having a total tonnage of 2,864,066 tons—a grand aggregate of 42,756 craft of all kinds, having a tonnage of 8,023,671 tons, or an average annual addition of 1,379 vessels of 258,828 tonnage-tons to our fleet. Not so bad for a nation with a dead “carrying trade.”

UNRIGGED CRAFT A LEGITIMATE PART OF OUR COMMERCIAL FLEET.

When, too, one quits the retrospective and comes to look at the actual condition of affairs, things are not exactly cheerless. Divided according to their mode of propulsion, we place the numbers and tonnage of the United States steam and sailing fleet for the Census year as follows:

Sailing vessels. . . . 8,917 craft of 1,791,071 tons.

Steam vessels. 6,067 craft of 1,818,386 tons.

Total. 14,984 craft of 3,615,457 tons.

But my contention is that these figures do not accurately represent the water transportation equipment of the United States, and that because of certain exigencies, local, topographical, and commercial, we require a large unriggered fleet which is as essentially a part of that equipment as the freight cars are essentially a part of a railroad's equipment. These unriggered do not include canal-boats, nor must it be supposed that they are small and inexpensive vessels. Their aggregate number according to the Census reports is 10,561, with a carrying capacity of 4,008,847 tons, or an average tonnage per craft of 380 tons. In the Mississippi valley, where we show that at least 6,339 of these unriggered craft find employment, the average tonnage is 502 tons, while on the Great Lakes it is 453 tons. Both on the lake and river barges steel is being largely used as a material of construction, and the tendency in each locality is to increase both the average capacity and value of this kind of craft. Putting all these classes together, we find that our entire fleet numbers 25,545 craft, with a tonnage of 7,624,304 tons. You will not find all these figures in the reports of the Commissioner of Navigation, because since 1884 the registration of unriggered (except in certain branches of trade) has been both optional and limited. It amounted in 1890, for instance, to but 1,240 craft, with an aggregate tonnage of 341,042 tons, with an average tonnage of but 275 tons.

When it comes to a question of values the figures are no less weighty, nor do they any the less plainly show that our shipping industry is not so near the moribund gasp as many good people seem to imagine. What was asked for by the Census schedules and agents was "the estimated commercial value" of the craft, and while this phrase was understood variously, it may be taken for granted that the figures which I shall give represent a conservative appraisement of the constructions as they float. The value of the 8,917 sailing vessels is thus figured up to be \$57,275,727, an average of \$6,423 per craft; that of the 6,067 steam vessels at \$140,813,570, an average of \$23,210 per craft; and that of the 10,561 unrigged craft at \$16,931,039, an average of \$1,603 per craft—an aggregate value for the entire fleet of 25,545 vessels of \$215,020,336, an average of \$8,417 per craft. Add to these figures \$25,000,000 for shore property and we have a total amount of \$240,020,336, while the total amount invested has been estimated at \$275,000,000, an amount that must mean quite extended interests.

One of the most popular of "interests" in any industry is that which touches the number of people to whom it gives employment and the money it pays out in wages. The interest on investment is a very entertaining thing, no doubt, but the financial topic never has the same popular interest that the

industrial has. The figures collected under this head of the inquiry show that the total of persons employed to make up the ordinary crews of all operating vessels numbered 109,861, while the men employed wholly or partially during the year numbered 240,288. The wages paid out to these people were \$39,684,936.

This was not the only disbursement, however, and the financial account of our floating institution is not one to be kept in a petty cash book. In the Census year the gross earnings of everything afloat (and reporting) amounted to \$144,800,954, out of which were paid \$114,531,690 as expenses, leaving \$30,269,264 as net earnings, which, as such of you gentlemen as are lightning calculators will have figured out, is 11 per cent. of return on the estimated capital investment of \$275,000,000, or 17 per cent. of return on the present valuation of \$240,000,000 for the floating property and its shore attachments. Into the other details of the expense account I cannot at present go, although I promise you they contain some very interesting figures. I must not refrain, however, from making one other exception in regard to the item of fuel. The totals of this account show that in the year in question our steamers burned for fuel—fuel applied to steam-making, I mean—no less than 4,585,031 tons of coal and 415,242 cords of wood, representing a total fuel expense of \$15,668,459.

Nor must I overlook the fact of much significance that outside of wages and fuel the expense account is largely made up of such items as provisions and repairs, classes of expenditure which mean the free and wide distribution of millions among millions—and this I take to be the diapason of the great economic anthem.

Not all the fleet that I have been speaking of is engaged in traffic operations—that is, in the transportation of freight and passengers. The list includes also pilot-boats, fishing vessels and yachts, crafts whose tonnage is registered and which in themselves offer means of employment, but which neither carry nor are given to carriage. These no-traffic vessels are not, however, very many, amounting in number to 966, with a tonnage of 39,398 tons, and in value to \$7,281,720, which sums, being deducted from the original figures, give the equipment statistics of those craft which are either directly or indirectly engaged in transportation at 24,579 in number, with a tonnage of 7,584,906 tons, and at \$207,738,616 in value.

Coming down to the actual traffic records of the Census we find that it received reports of operation from 22,079 craft conducting transportation. Of these 2,282 were steamers and 6,837 were sailing vessels engaged in carrying freight and passengers, their united tonnage being 2,912,693 tons; 455 were

ferry steamers, with a tonnage of 146,099 tons; 1,944 were steamboats engaged in towing freight-laden barges, with a tonnage of 145,805 tons, while the barges so towed numbered 10,561, with a tonnage of 4,008,847 tons. The total tonnage of this reporting traffic fleet of 22,079 craft was 7,213,434 tons and its value \$184,126,053, which shows that the Census received reports on nearly 90 per cent. of the entire traffic fleet.

The report of operations made by these traffic craft is in some respects a remarkable one, the freight moved having been no less than 168,078,320 tons, and the passengers carried having been 199,079,577; in the pursuit of which business, by the by, these vessels traveled 107,456,164 miles.

COMPENSATING STATISTICS OF OUR DOMESTIC CARRYING TRADE.

Unless I have been speaking to no purpose you will by this time be ready to inquire how the undeniable statistics of the decline of our "carrying trade" given in the first part of this paper can be reconciled with, what it is presumed are, the equally undeniable statistics just given to illustrate the present excellent condition of transportation by water, and I should be paying you a very poor compliment if I did not say that I was sure you had arrived at the true method of reconciliation. There is plenty of

progress and activity in the business of our transportation by water, but it is not upon the high seas that we must look for it. When the uncomprehensive statistician talks of the decline and death of our "carrying trade" he forgets, or does not choose to specify, that it is that branch only of the "carrying trade" which is conducted on the great ocean highway between the ports of this country and the ports of other countries, and he omits to point out the compensatory fact that our salvation is found in the statistics of that branch of our carrying trade which is conducted from domestic port to domestic port along our sea-shore, and in that which is conducted upon our inland waters.

Let us look at a few of the figures embraced in this compensatory fact :

You may, perhaps, remember my saying just now that our shipbuilding records for the years 1860 to 1890, inclusive, showed an added tonnage during that period of 8,023,671 tons, and we now find that out of that aggregate 1,172,416 tons were built on the Mississippi river and its tributaries, and 1,508,101 tons on the Great Lakes, a total of 2,680,517 tons built on these inland waters as against 5,343,154 tons built on the entire seaboard of the United States. Looking at these figures somewhat more in detail, we find that in 1860, out of a total of 214,798 tons, 44,962 tons were built on inland waters and 169,836 tons

on the seaboard; that in 1870, out of a total of 276,953 tons, 94,117 tons were built on inland waters and 182,836 tons on the seaboard; that in 1880, out of a total of 157,410 tons, 55,690 tons were built on inland waters and 101,720 tons on the seaboard; while in 1890, out of a total of 294,123 tons, 125,032 tons were built on inland waters and 169,091 tons on the seaboard. Put in the percentage form, these figures indicate that in 1860 the shipbuilding yards on the inland waters turned out 21 per cent. of all the tonnage built in the United States; that in 1870 they turned out 34 per cent.; that in 1880 their percentage was 35, and that in 1890 it had risen to 43 per cent.

One peculiar fact about these figures is that the tonnage built on the seaboard in 1890 was just the same as it was in 1860—169,000 tons in each year. Another peculiar fact is that shipbuilding on the Mississippi river and its tributaries has apparently suffered a decline. In explanation it should be stated that the figures of construction which I have been giving you are confined to the United States Treasury records of *registered* craft. It is, as I have shown, from the Mississippi valley that the largest accession of unrigged craft is made to the United States fleet, and as the registration of these unrigged, it will be remembered, is now optional and very limited, the figures of registered construction fail to

do justice to the industry of vessel-building in the Mississippi valley. The third peculiar fact in connection with these figures is the wonderful development of shipbuilding on the Great Lakes. In 1860 the tonnage built in the yards of these inland seas was but 11,992 tons—indeed, in the preceding year it was only just over 6,000 tons—and from these figures it went gallantly up year after year, 23,000 tons, 39,000 tons, 56,000 tons, 73,000 tons, and so on, until in 1890 it reached 108,526 tons, or within 60,000 tons of the tonnage built round about the United States seaboard from Machias, in northern Maine, to Puget sound, in Washington.

Returning next to the entire floating equipment of the Census year, we find that of the total tonnage of 7,624,304 tons, 4,319,735 tons belonged to the Great Lakes and Mississippi valley. In the matter of financial accounts, we find that out of the \$144,800,954 of gross earnings, the Lake fleet reported for \$35,636,163 and the Mississippi fleet for \$7,651,248—a total for these two localities of \$43,287,411; that out of the \$114,531,690 which were paid for expenses, \$28,033,651 were paid by the Lake fleet and \$6,580,356 were paid by the Mississippi fleet, a total for these two localities of \$34,614,007, and that out of the total of \$30,269,264

of net earnings the Lake fleet secured \$7,602,512 and the Mississippi fleet \$1,070,892, a total for these two localities of \$8,673,404.

INTERESTING FIGURES OF LOCALIZATION AND NOTEWORTHY FACTS OF COMPARISON.

If we take up the two details of fuel and wages which were specified when considering the expense account of all the operating steamers, we find that out of the 4,585,031 tons of coal burned for steam-making, 1,541,907 tons were used by the Lake steamers and 372,729 tons by those of the Mississippi valley; and that out of the \$15,668,459 which this fuel cost, \$4,113,278 were paid by the Lake steamers and \$1,335,812 by the steamers of the Mississippi valley. The number of men, you will remember, to whom employment was given by all operating craft during the Census year was 240,288, to whom was paid as wages \$39,684,936. Out of this number of men 42,150 were employed on the Great Lakes, and out of this amount there were paid \$8,140,430 as wages to the lakemen, while 32,792 persons received employment on the Mississippi Valley fleet, to whom was paid \$5,338,862.

The figures of localization respecting those craft distinctively engaged in traffic operations are equally interesting, an investigation of the records showing that out of the 22,079 steamers, sailing vessels, and

unrigged engaged in the transportation of freight and passengers, 9,708 were employed on the Great Lakes and the rivers of the Mississippi valley. The account of sailing vessels and unrigged craft on the respective waters is nearly equally balanced by the offsets springing from the exigencies of locale to which I have already referred, but the steamer account presents a very plain showing of the relative importance of the inland water traffic. The figures collected by the Census Office give the Atlantic coast, Gulf of Mexico, and Pacific coast 2,581 traffic steamers (that is, freighters, towing and ferry-boats), and to the Great Lakes and Mississippi valley 2,100. The tonnage of the sea steamers is given at 807,702, and that of the fresh-water steamers at 756,981; while the value of the sea steamers is quoted at \$69,861,165, and that of the steamers on inland waters at \$48,205,332. Calculations will show these figures to indicate that the inland waters owned 45 per cent. of the total number of United States freight steamers, 48 per cent. of their tonnage, and 41 per cent. of their value. In view of these figures it will not surprise you to be told that out of the 168,078,320 tons of freight moved by the traffic fleet of the United States 82,829,478 tons (or a trifle over 49 per cent.) were moved by the freighting craft of the inland waters, the Mississippi river boats moving 29,405,046 tons and the Lake fleet moving no less than 53,424,432 tons.

The legitimate importance of the unrigged craft in our mercantile fleet can be appropriately shown here by the fact that of the river freight the amount actually transported *on* steamers was 10,345,504 tons, while that carried on the barges and towed *by* the steamers was 19,059,542 tons.

Although a large bulk of our inland water commerce is that of the Great Lakes and the rivers of the Mississippi valley, the fact must not be overlooked that this country in its enormous territorial area includes other rivers and closed seas on which there is conducted a bulky commerce on craft that never heel over to a sea breeze. On the Hudson river, on the Delaware, on the Georgian streams and those of Alabama, on the Texas reaches of the Rio Grande, on the great Bay of San Francisco and its tributary rivers, far up on the Snake and Willamette, on the mighty Columbia and on the unplumbed waters of Puget sound a big water trade is carried on that is as distinctively inland as that on the shifting Missouri or on these Brethren of the Sea that lie about us, and that amounted in the Census year to the movement of nearly 12,000,000 tons of freight.

Nor do these figures set the limit of our *domestic* water commerce, for as yet we have taken no notice of that portion of it which is engaged in what is known as the coasting trade—that is, as I have said, in trading from domestic port to domestic port along

our seashores. In these occupations the traffic craft registered at the Atlantic coast ports carried 72,705,973 tons of freight, while those similarly engaged on the Pacific coast carried 8,111,278 tons of freight, a total of 80,817,251 tons. If now we gather up the various figures of our domestic commerce the result will line out somewhat as follows :

Freight movement of the Great Lakes, wholly domestic.....	53,424,432 tons.
Freight movement on the rivers of the Mississippi valley, wholly domestic...	29,405,046 “
Domestic commerce on the Atlantic coast and Gulf of Mexico.....	72,705,973 “
Domestic commerce on the Pacific coast..	8,111,278 “
Making a total of.....	164,646,729 “
Add to these figures the..... of canal traffic	20,747,932 “
And we have a total freight movement on our inland waters of.....	185,394,664 “

When one reads or hears these figures, so close to the 200,000,000 mark, figures which give the best indication that I can imagine of what our domestic commerce on water really is, one becomes comparatively reconciled to the fact that our foreign commerce amounted in the Census year to the movement of but 4,431,591 tons of freight—that is, freight brought into and carried from United States ports on United States vessels flying the United States flag.

It was not without some foreboding that I ven-

tured upon any comparative statistics, but I was soon delighted to find that we were not going to suffer, even in the odious process of comparison. I resolved to take for my basis the greatest maritime country of the world, that country which is nearly all water and somebody else's land, Great Britain; and especially Great Britain, as it is the country that does seven-tenths of our foreign-carrying trade for us. The chief difficulty in instituting the comparison was to find a standard of classification, and the following, while measurably correct, cannot be regarded as strictly accurate. Dealing only with those vessels engaged in traffic, we see that while in the Census year Great Britain had 5,968 vessels engaged exclusively in the foreign trade, with a tonnage of 6,595,445 tons, we only listed 686, with a tonnage of 636,691 tons. Of vessels engaged in mixed foreign and domestic trade, Great Britain had 760, with a tonnage of 185,026 tons, while we had 601, with a tonnage of 237,694 tons. Of vessels engaged exclusively in domestic trade, Great Britain's account was 10,826, with a tonnage of 860,683 tons, while ours was 12,731, with a tonnage of 2,701,674 tons. But so far I have dealt only with the steamers and sailing vessels of both nations, and here again my contention is that our unrigged craft should certainly be added to our domestic mercantile fleet. With this addition, our contingent engaged in the home trade

rises to 23,292 craft, with a tonnage of 6,710,521 tons, while the totals of the two fleets stand as follows: Great Britain, 17,554 craft; the United States, 24,579. Great Britain's tonnage, 7,641,154; the United States' tonnage, 7,584,916—less than 40,000 tons behind Great Britain in the tonnage account, and 7,025 craft ahead. So you see the case does not look so very desperate after all.

A reduction of these figures to averages shows that though Great Britain's foreign fleet averaged 1,105 tons per vessel, while the average of our foreign traders was only 928 tons, yet the average tonnage of Great Britain's domestic fleet was only 80 tons per craft, while that of our domestic fleet was 212 tons without the unrigged, and 286 tons per vessel including the unrigged.

DISTANCES ON OUR RIVERS AND LAKES EQUAL THOSE MADE BY ENGLISH VESSELS ON FOREIGN VOYAGES.

The success which attended this branch of comparative statistics tempted me to pursue another—this time into the question of distances traveled by our domestic trading craft as compared with many of the distances traveled by Great Britain's foreign trading craft. The proposition sounds rather presumptuous at first hearing, but a little investigation will show the idea to be anything but far-fetched.

Our tables of trips and mileage show the average distance of the trading trips on the Great Lakes to be 566 miles, while the figures kindly furnished me by the Hydrographic Survey show the distance from Hull to Hamburg to be but 387 miles, from London to Helgoland to be but 408 miles, from Plymouth to Bordeaux to be 468 miles, while even the apparently very foreign trip from Plymouth, in the west of England, to Coruna, in Spain, is but 530 miles.

The average distance of trading trips on the Mississippi river is 759 miles, while the trip from Sunderland to Copenhagen is 586 miles, and that to Drontheim, in Norway, is 695 miles; from Liverpool away down to Vigo is 735 miles, and from Plymouth to Lisbon is 755 miles.

But the figures just given for our domestic trips are only those of average routes, and it will be found that when one comes to consider the foreign places lying within the ratio of miles from British ports which can be covered by the extreme routes on the rivers and lakes, the list becomes a very much longer one—geographically speaking. It can be said, for example, and with truth, that while the average distance on the Great Lakes is 566 miles, the lake routes include that from Ogdensburg to Duluth, which is 1,285 miles; and that while the average distance on the Mississippi is 759 miles, the river routes include

that from St. Paul to the Head of the Passes, a distance of 1,780 miles. By comparing the extreme Lake distance with those between British and other foreign ports, we find that from Shields away over to Riga, in the Baltic, is but 1,053 miles, and that from Sunderland clear up to the northernmost point of Norway—that is, the island of Mageror—is 5 miles less than from our New York to our Minnesota lake ports. By comparing the extreme river distance with those between British and other foreign ports, we find that from London to Kronstadt is but 1,383 miles, that from Sunderland out over the Atlantic to the Azores is but 1,740 miles, and that from Glasgow, in bonny Scotland, to Algiers, in burning Africa, falls 5 miles within the limit of extreme distances on the Father of Waters.

When we come to coast distances we cover a very much more extensive field of Great Britain's foreign commerce. The average distance made by our coasting craft on the Atlantic coast and Gulf of Mexico is 377 miles, but these coast routes also include that from Calais, in Maine, to Point Isabel, in Texas, which is 2,597 miles. Looking at Great Britain's ventures over foreign seas we find that the trader from London to Genoa makes a trip of but 2,219 miles, that the ship bringing currants from Corfu to Liverpool travels but 2,510 miles, and that the collier carrying coal from Cardiff, in Wales, to Patras, in Greece,

makes but 2,455 miles. It would, perhaps, be scarcely straining a point to say that our coast routes include traffic between New York and San Francisco, which is 13,610 miles, or even between New Bedford, on the Maine gulf, and Olympia, on Puget sound, which is a trifle over 15,000 miles. On the other hand, it is only 2,685 miles from London to Halifax, Nova Scotia; only 3,000 miles from London to Sierra Leone, in Africa; only 6,065 miles from London to the Cape of Good Hope; only 8,745 miles from London to Adelaide, in Australia; only 11,755 miles from London to Nagasaki, Japan, and only 12,120 miles from London to the bottom of the world at Auckland, New Zealand.

The domestic commerce of the United States is indeed an incomparable industry; there is no country in the world which has anything, or which can have anything, approaching it. The United States has a coast line that stretches for no less than 10,455 miles. It contains within its borders the largest lacustrine system on the globe, the combined area of the Great lakes being 95,060 square miles, or more than half the world's area of fresh water. The Mississippi and its tributaries offer 7,898 miles of navigable river, the Missouri and its tributaries add 3,106 miles to that length, and the Ohio and its tributaries embrace 4,406 miles of navigation, a total for the great valley of 15,410 miles; the rivers emptying into the Pacific



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ocean give us 2,351 miles of navigable streams ; those flowing into the Gulf of Mexico other than the Mississippi give us 2,870 miles and those flowing into the Atlantic ocean 2,874 miles, an enormous total of 23,505 miles of navigable rivers, a water-way that only lacks a little of being long enough to belt the world. The foreign carrying trade may have temporarily passed out of our hands between the stress of competition abroad and the dead weight of apathy at home, but we are still traders, we still have a merchant marine. Along the shining streams of Maine ; between the hundred ports of Long Island sound ; along the steaming glades of the southern water-courses ; across the drab waves of San Francisco bay ; in Puget's waters, where the pines stand thick around Vancouver, and far up in Bering's closed sea there is a commerce carried on that grows each year in value and extent, and that is full of pay and power and promise. But it is a commerce that needs fostering care. The value of that grand fluvial system which stretches across from Pennsylvania to Nebraska, and which runs from Dakota to the Gulf, must never be underestimated ; the effect for wealth and civilization that lies in our Great Lakes must never be undervalued, and the heritage of our myriad harbors must never be bartered or lost.